5 .

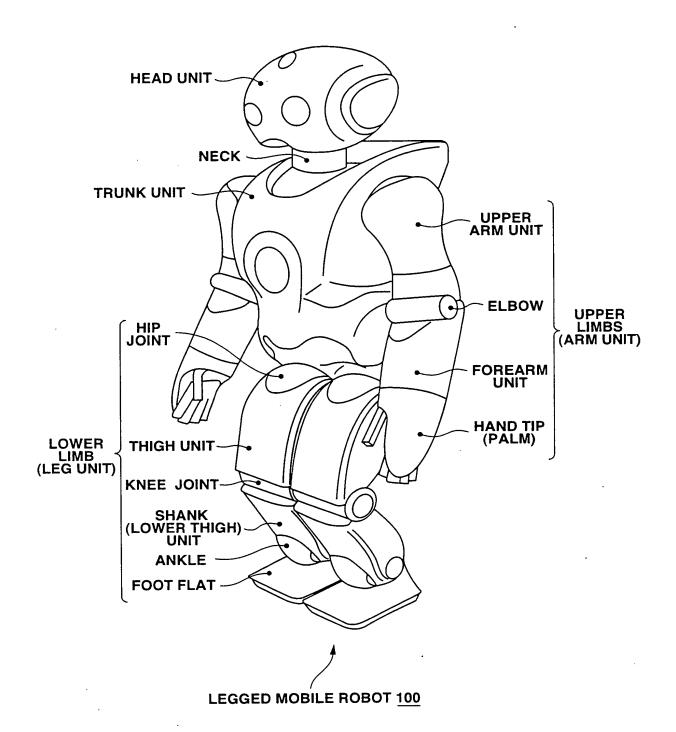


FIG.1

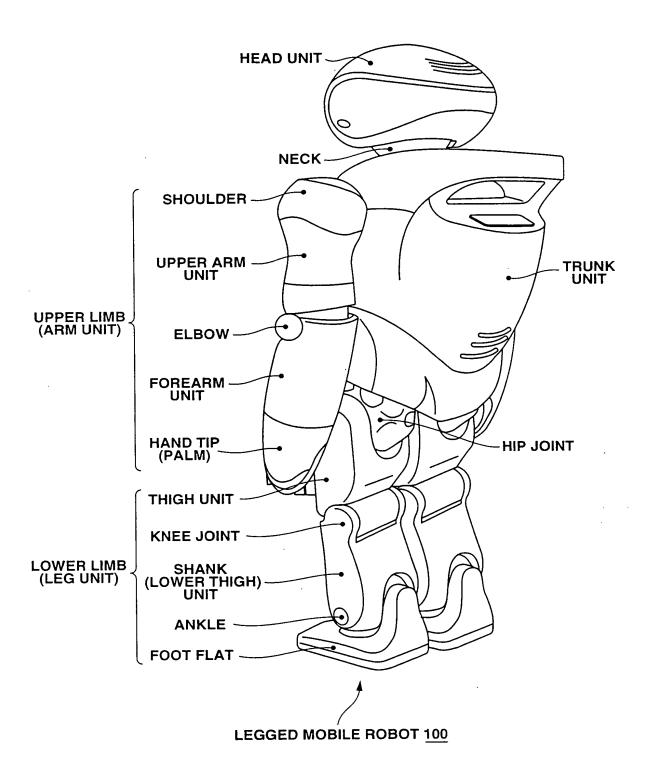


FIG.2

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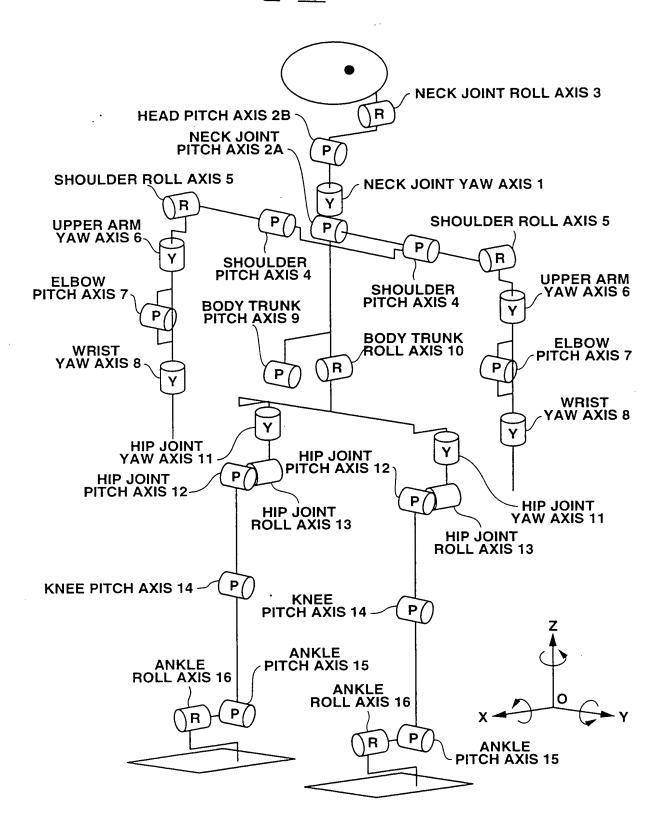


FIG.3

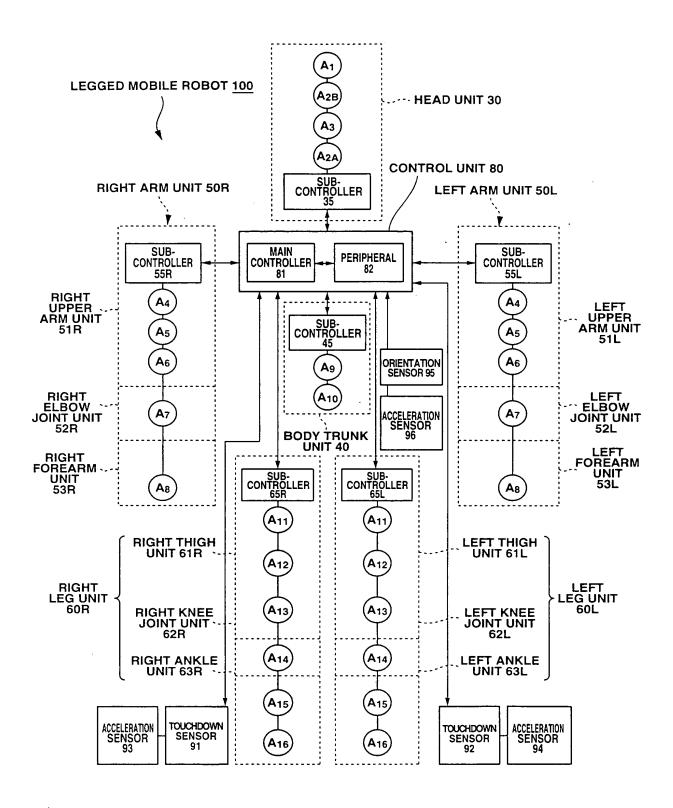
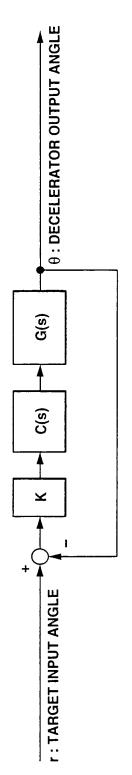


FIG.4



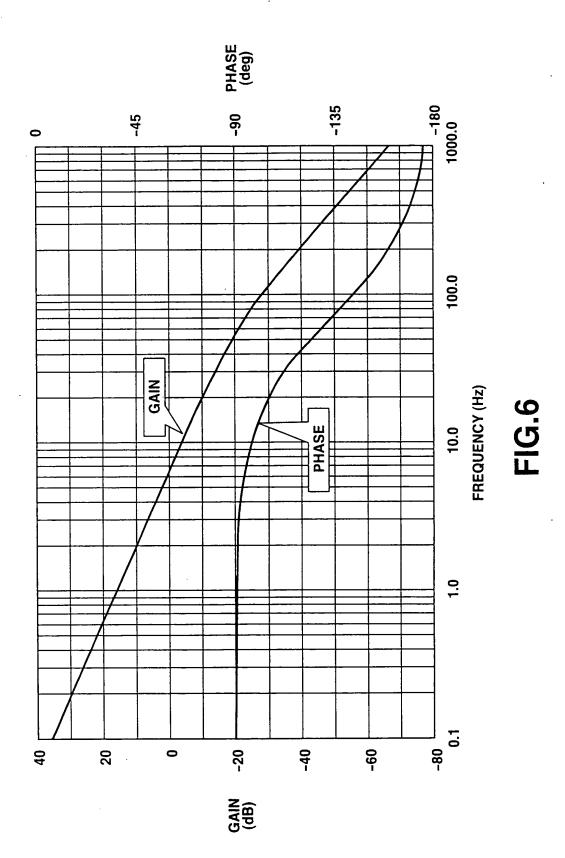
K: SERIAL COMPENSATION GAIN (PROPORTIONAL GAIN)

C(s): TRANSFER FUNCTION OF PHASE COMPENSATION ELEMENT

G(s): MODEL FOR REPRESENTING TRANSFER FUNCTION FOR MOTOR AND DECELERATOR

FIG. 5

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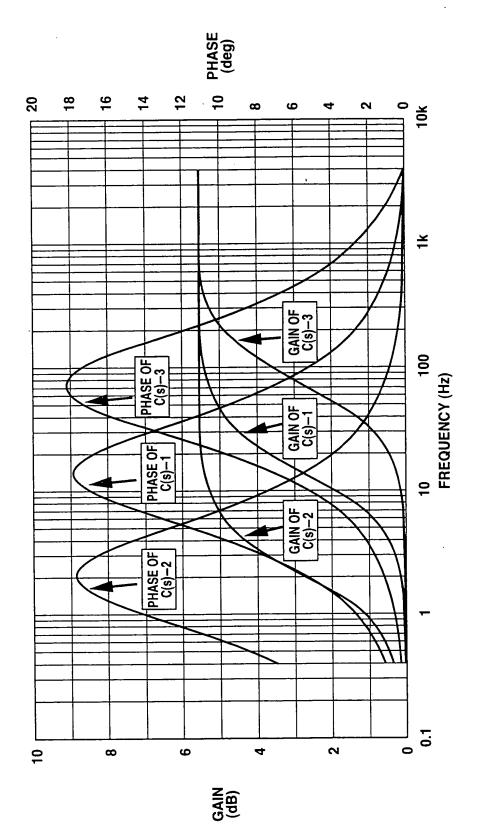
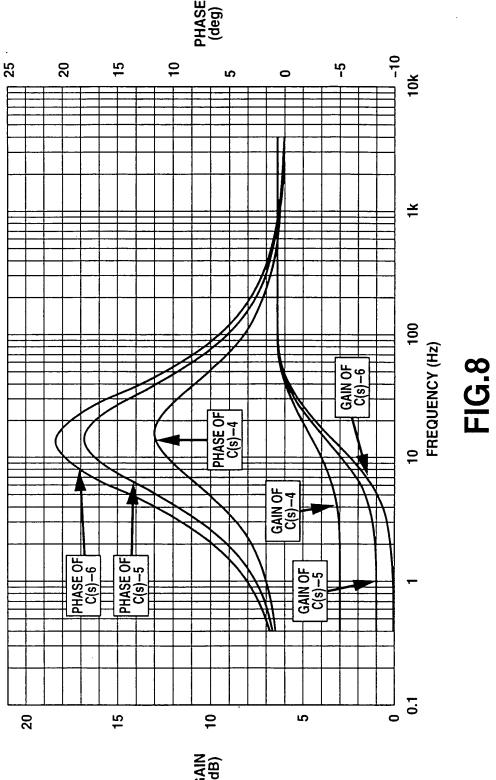


FIG.



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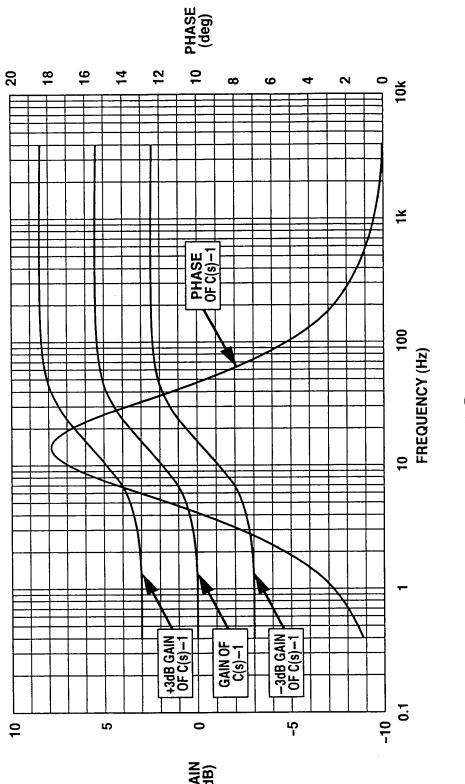


FIG. 9

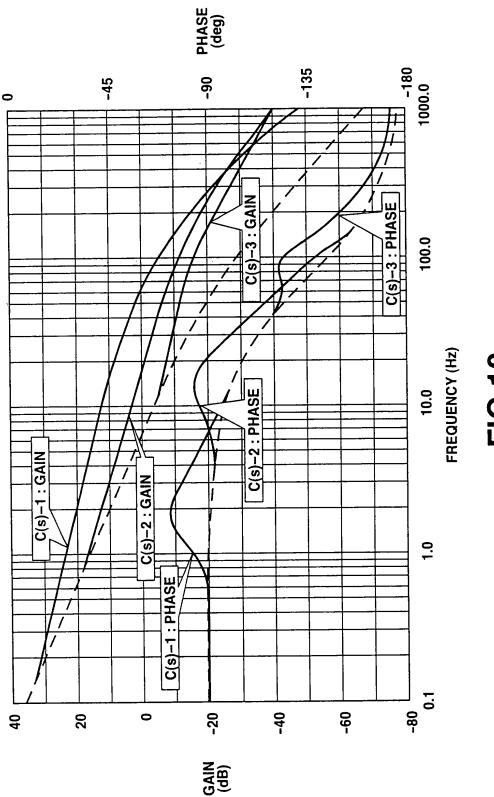
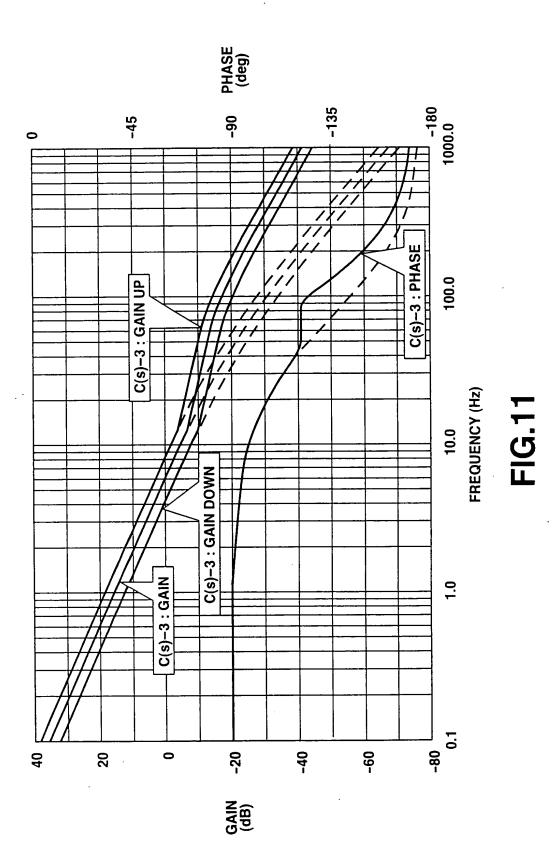
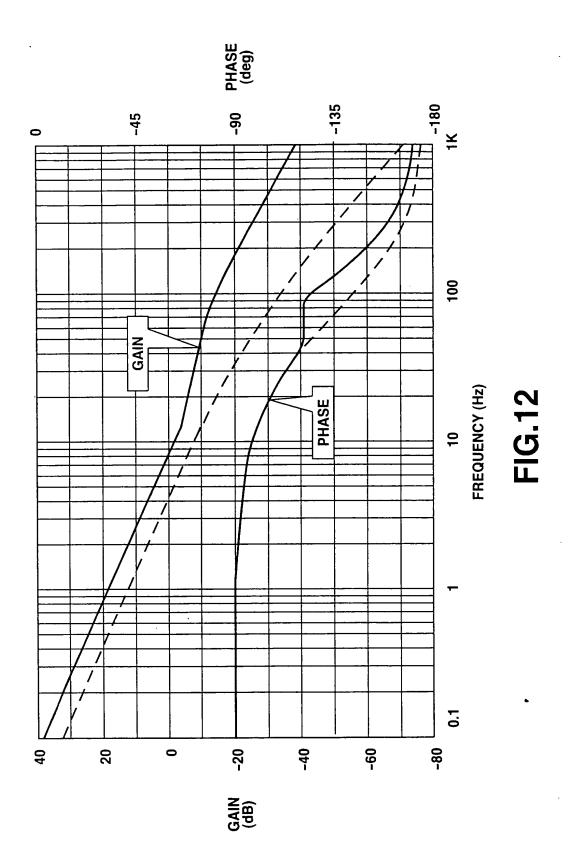


FIG. 10

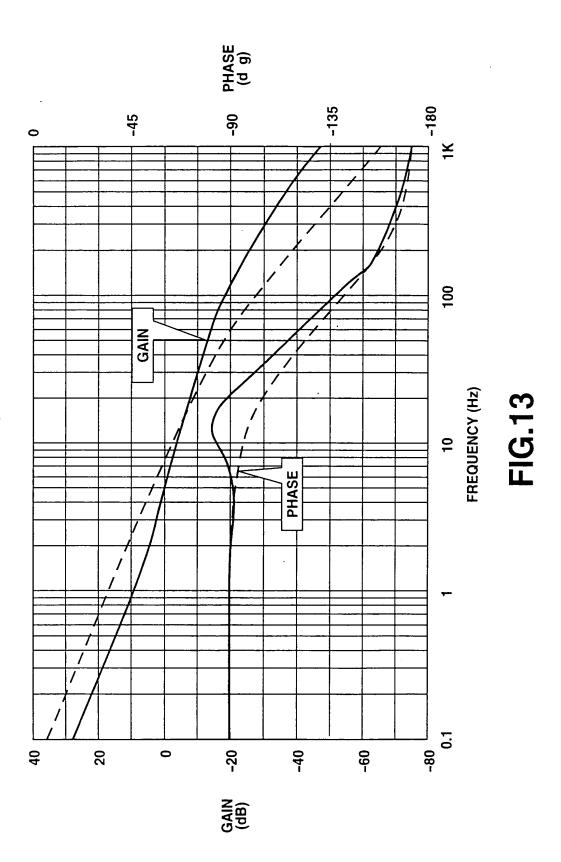
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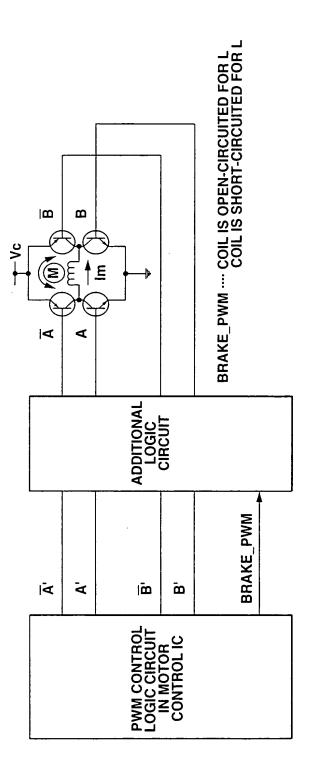


FIG.14

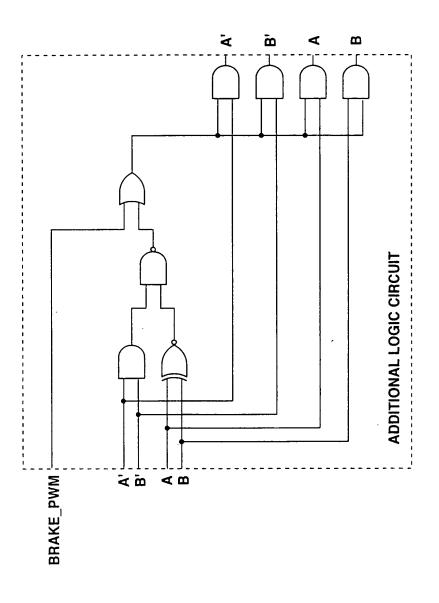
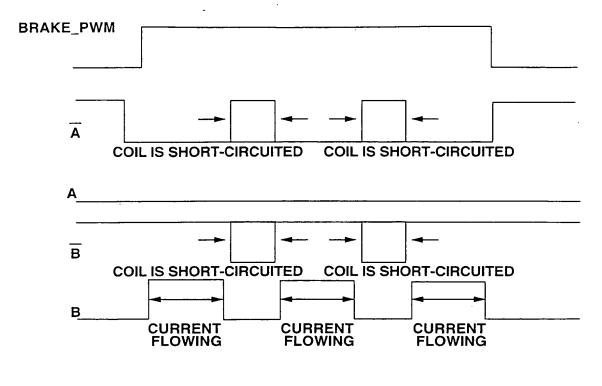
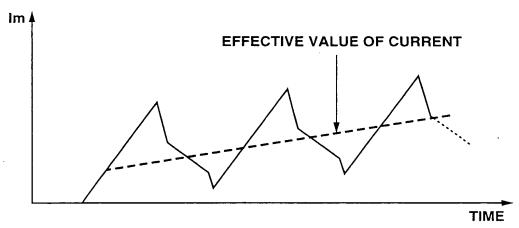


FIG. 15

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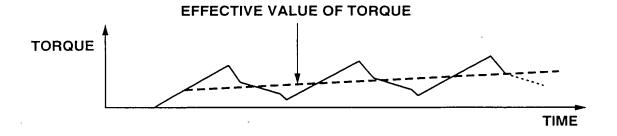


FIG.16

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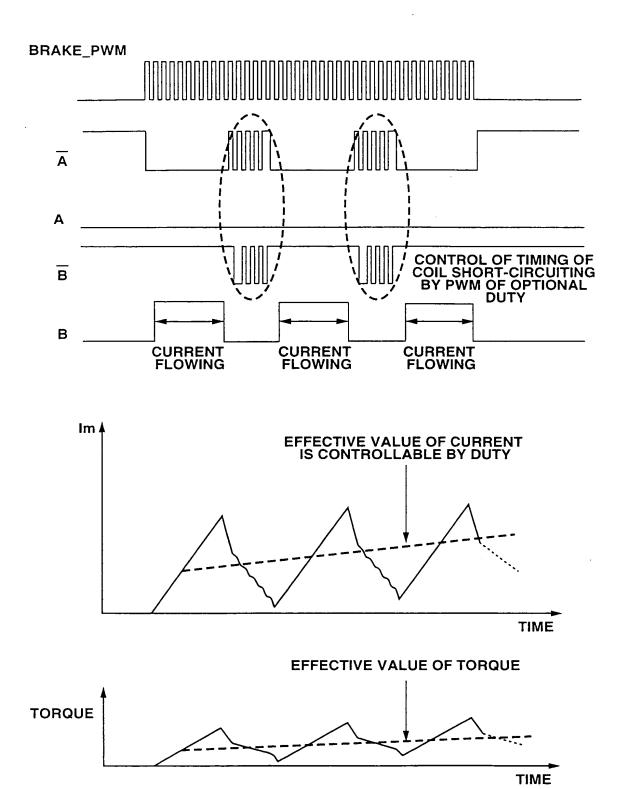


FIG.17

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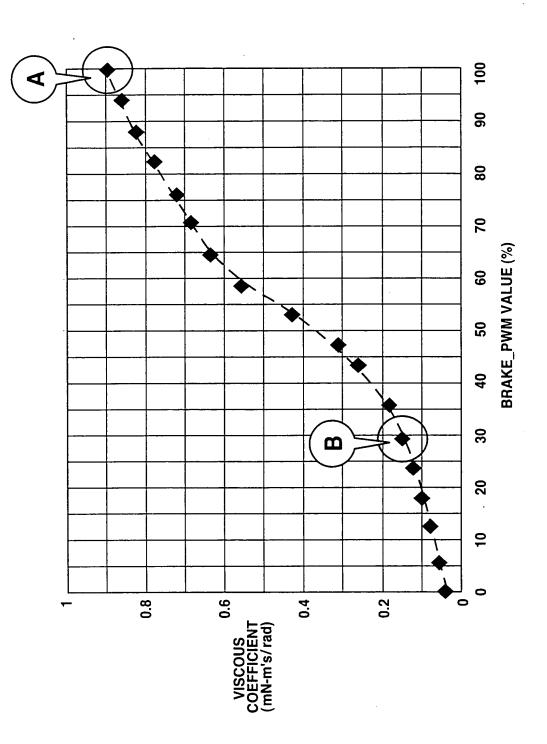


FIG. 18

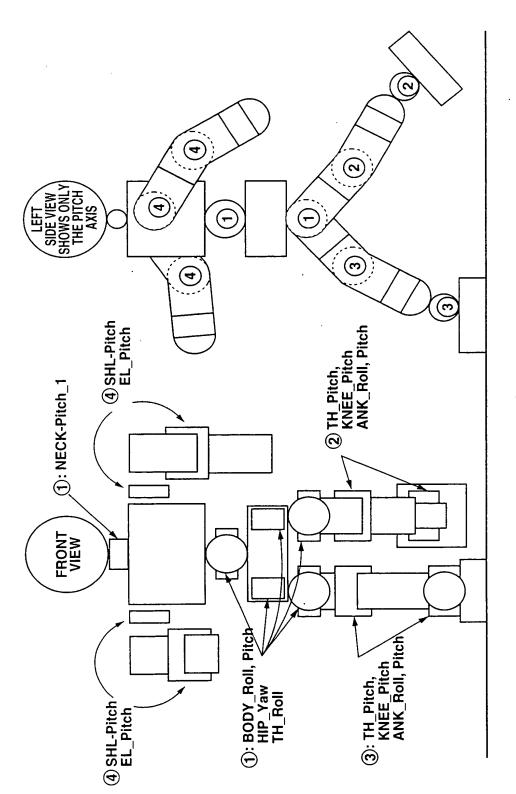


FIG.19

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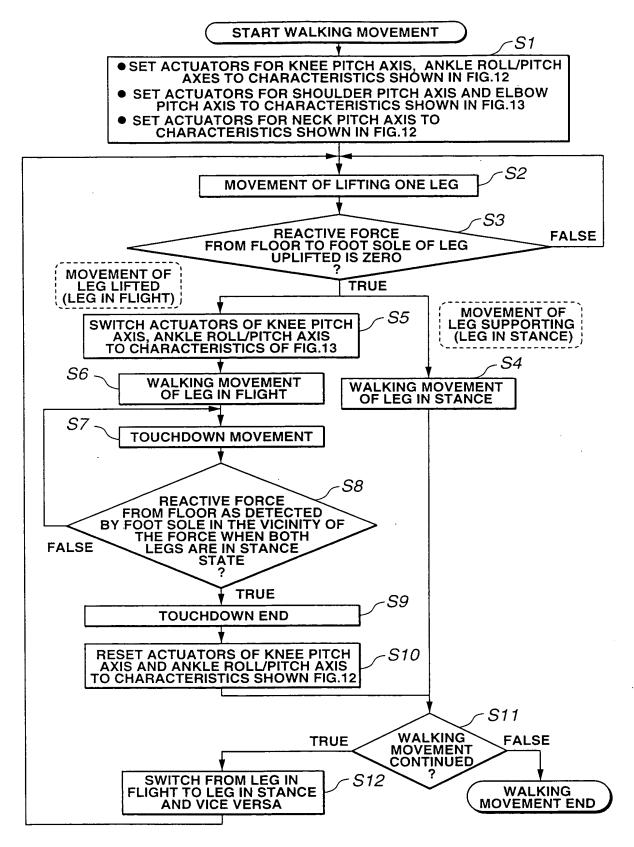


FIG.20

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LOWER LIMBS (BOTH LEGS) AND FLOOR SURFACE DEFINE CLOSED LINK DURING UPSTANDING OF THE ROBOT

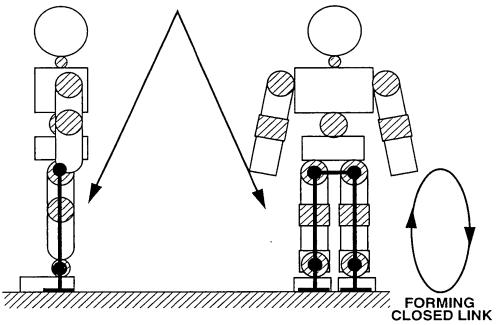


FIG.21

LOWER LIMBS (BOTH LEGS) AND FLOOR SURFACE DEFINE OPEN LINK DURING UPSTANDING OF THE ROBOT

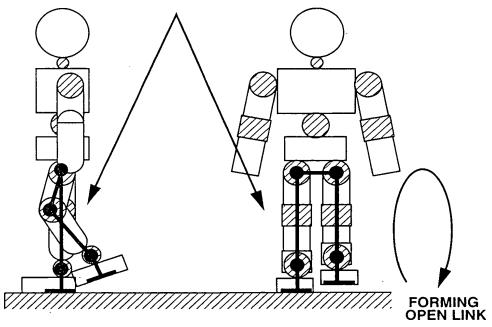


FIG.22

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

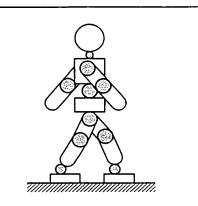
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN BOTH LEGS ARE IN STANCE



	SHOULDER PITCH	STIFF JOINT CHARACTERISTICS	
	ELBOW PITCH	СН	STIFF JOINT IARACTERISTICS
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
RIGHT	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	SHOULDER PITCH	STIFF JOINT CHARACTERISTICS	
	ELBOW PITCH	STIFF JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
:	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
OTHER JOINT SITES		STIFF JOINT CHARACTERISTICS	

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

INTERMEDIATE JOINT CHARACTERISTICS

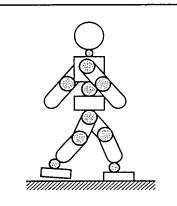
SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

INSTANT OF CLEARING THE FLOOR

ROBOT BODY (LEGS, BODY TRUNK AND ARMS) FORMS A CLOSED LINK SYSTEM WITH FLOOR SURFACE



	SHOULDER PITCH	STIFF JOINT CHARACTERISTICS	
	ELBOW PITCH	STIFF JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
RIGHT	THIGH PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	SHOULDER PITCH	STIFF JOINT CHARACTERISTICS	
	ELBOW PITCH	STIFF JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
OTHER JOINT SITES		STIFF JOINT CHARACTERISTICS	

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

INTERMEDIATE JOINT CHARACTERISTICS

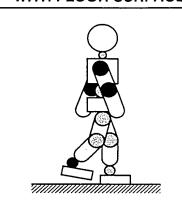
SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE (ANOTHER LEG BEING LIFTED)

ROBOT BODY (LEGS, BODY TRUNK AND ARMS) FORMS A CLOSED LINK SYSTEM WITH FLOOR SURFACE



		L	
	SHOULDER PITCH	SOFT JOINT CHARACTERISTICS	
	ELBOW PITCH	SOFT JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
RIGHT	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	SHOULDER PITCH	STIFF JOINT CHARACTERISTICS	
	ELBOW PITCH	STIFF JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
OTHER JOINT SITES		STIFF JOINT CHARACTERISTICS	

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

INTERMEDIATE JOINT CHARACTERISTICS

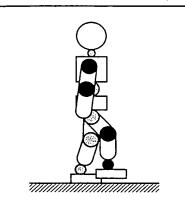
SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE (ANOTHER LEG BEING SWUNG DOWN)

ROBOT BODY (LEGS, BODY TRUNK AND ARMS) FORMS A CLOSED LINK SYSTEM WITH FLOOR SURFACE



	SHOULDER PITCH	СН	SOFT JOINT ARACTERISTICS
	ELBOW PITCH	SOFT JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
RIGHT	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	SHOULDER PITCH	STIFF JOINT CHARACTERISTICS	
	ELBOW PITCH	STIFF JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
OTHER JOINT SITES		STIFF JOINT CHARACTERISTICS	

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

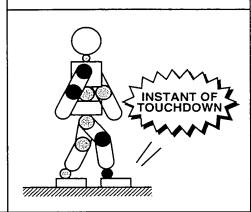
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

INSTANT OF TOUCHDOWN



	SHOULDER PITCH	СН	SOFT JOINT ARACTERISTICS
	ELBOW PITCH	SOFT JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
RIGHT	ТНІСН РІТСН	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	SHOULDER PITCH	STIFF JOINT CHARACTERISTICS	
	ELBOW PITCH	STIFF JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
OTHER JOINT SITES		STIFF JOINT CHARACTERISTICS	

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

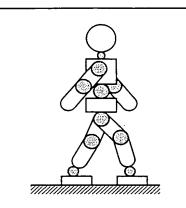
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN BOTH LEGS ARE IN STANCE



	SHOULDER PITCH	STIFF JOINT CHARACTERISTICS	
	ELBOW PITCH	STIFF JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
RIGHT	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
!	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	SHOULDER PITCH	STIFF JOINT CHARACTERISTICS	
	ELBOW PITCH	STIFF JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
OTHER JOINT SITES		STIFF JOINT CHARACTERISTICS	

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

INTERMEDIATE JOINT CHARACTERISTICS

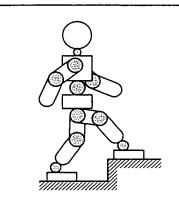
SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN BOTH LEGS ARE IN STANCE

LOWER LIMBS FORM A CLOSED LINK SYSTEM WITH FLOOR SURFACE



	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
RIGHT	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
LEFT	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS	
OTHER JOINT SITES		CH	STIFF JOINT HARACTERISTICS	

FIG.29

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

INTERMEDIATE JOINT CHARACTERISTICS

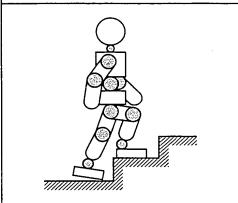
SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

INSTANT OF CLEARING THE FLOOR

TRANSITION FROM CLOSED LINK SYSTEM TO OPEN LINK SYSTEM



	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
LEFT	KNEE PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
OTHER JOINT SITES		СН	STIFF JOINT IARACTERISTICS

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

INTERMEDIATE JOINT CHARACTERISTICS

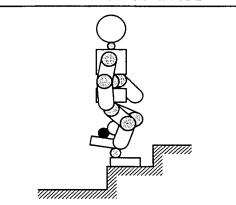
SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE (ANOTHER LEG BEING LIFTED)

ROBOT BODY (LEGS, BODY TRUNK AND ARMS) FORMS AN OPEN LINK SYSTEM WITH FLOOR SURFACE



	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
-	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
LEFT	KNEE PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
OTHER JOINT SITES		CH	STIFF JOINT IARACTERISTICS

FIG.31

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

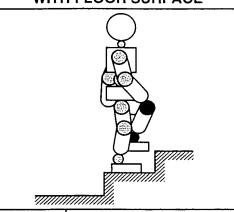
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B) TIME PERIOD WHEN A SOLE LEG IS IN STANCE (ANOTHER LEG BEING SWUNG DOWN)

ROBOT BODY (LEGS, BODY TRUNK AND ARMS) FORMS AN OPEN LINK SYSTEM WITH FLOOR SURFACE



	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
LEFT	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
OTHER JOINT SITES		CH	STIFF JOINT IARACTERISTICS

STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

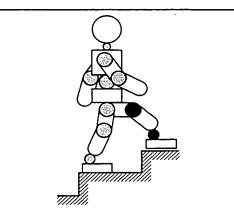
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

INSTANT OF TOUCHDOWN



	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
LEFT	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
OTHER JOINT SITES		CH	STIFF JOINT IARACTERISTICS

FIG.33

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

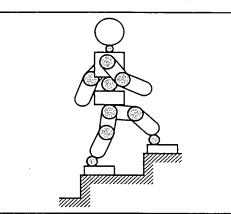
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

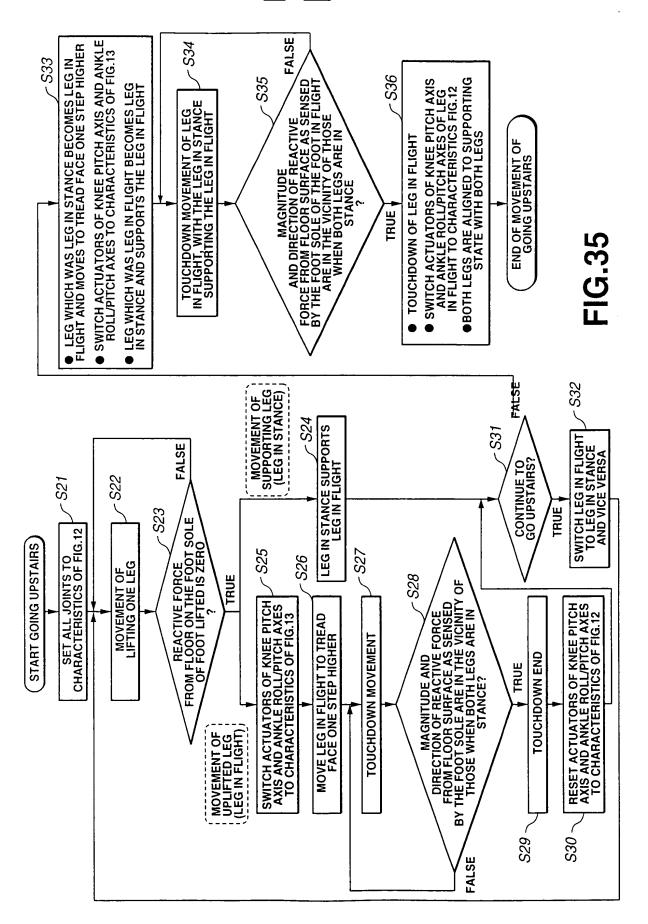
TIME PERIOD WHEN BOTH LEGS ARE IN STANCE



			41111111		
:	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
RIGHT	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
LEFT	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS		
OTHER JOINT SITES		СН	STIFF JOINT IARACTERISTICS		

FIG.34

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

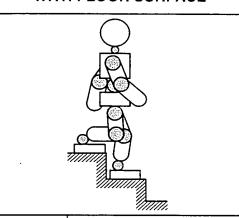
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN BOTH LEGS ARE IN STANCE



RIGHT	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
OTHER JOINT SITES		STIFF JOINT CHARACTERISTICS	

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

INTERMEDIATE JOINT CHARACTERISTICS

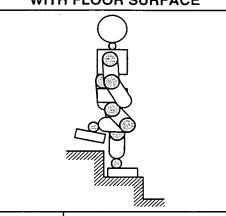
SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

INSTANT OF CLEARING THE FLOOR

ROBOT BODY (LEGS, BODY TRUNK AND ARMS) FORMS AN OPEN LINK SYSTEM WITH FLOOR SURFACE



RIGHT	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFT	THIGH ROLL	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	KNEE PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
OTHER JOINT SITES		STIFF JOINT CHARACTERISTICS	

FIG.37

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

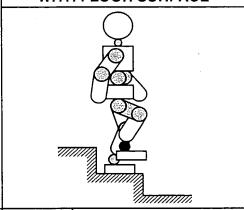
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE (ANOTHER LEG BEING LIFTED)



	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN FLIGHT	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
ОТ	OTHER JOINT SITES		STIFF JOINT IARACTERISTICS

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

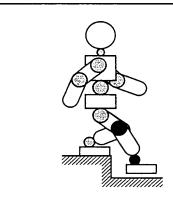
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE (ANOTHER LEG BEING SWUNG DOWN)



	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
OTHER JOINT SITES		СН	STIFF JOINT IARACTERISTICS

FIG.39

STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

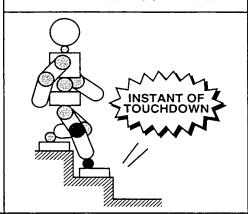
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

INSTANT OF TOUCHDOWN



	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
-	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
ОТ	OTHER JOINT SITES		STIFF JOINT ARACTERISTICS

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

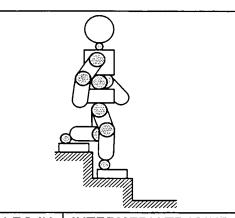
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

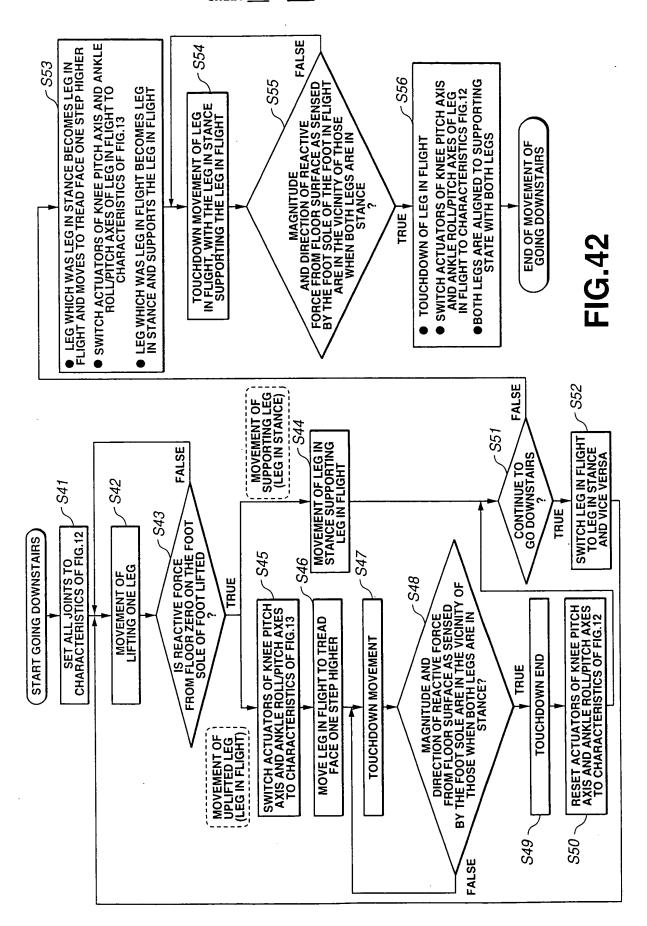
TIME PERIOD WHEN BOTH LEGS ARE IN STANCE

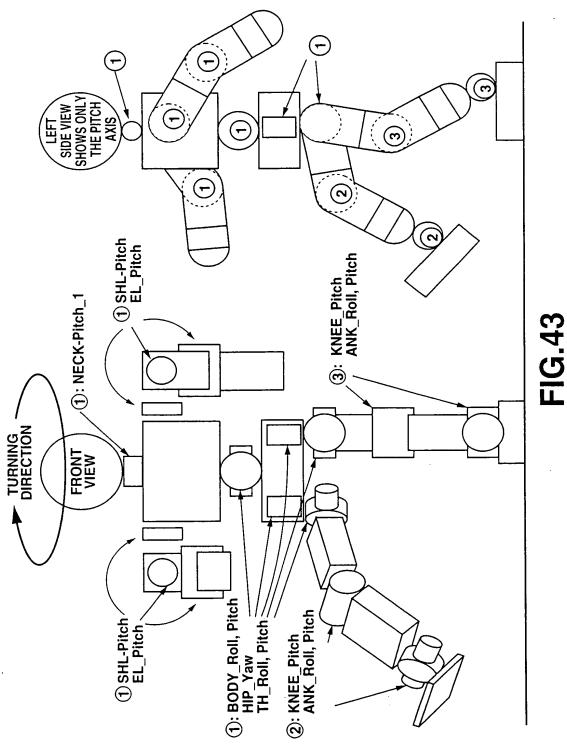


		l .	
	THIGH ROLL	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
LEFT	KNEE PITCH	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATEJOINT CHARACTERISTICS
ОТ	OTHER JOINT SITES		STIFF JOINT IARACTERISTICS

FIG.41

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STIFF JOINT TIME PERIOD WHEN BOTH CHARACTERISTICS LEGS ARE IN STANCE SERVO CHARACTERISTICS (FIG.12) LOWER LIMBS FORM A CLOSED LINK SYSTEM WITH FLOOR SURFACE JOINT VISCOSITY (FIG.18A) INTERMEDIATE JOINT **CHARACTERISTICS** SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A) SOFT JOINT CHARACTERISTICS SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B) LEG IN INTERMEDIATE JOINT THIGH YAW STANCE **CHARACTERISTICS LEG IN** INTERMEDIATE JOINT THIGH ROLL **CHARACTERISTICS** STANCE LEG IN INTERMEDIATE JOINT THIGH PITCH STANCE **CHARACTERISTICS** RIGHT LEG IN INTERMEDIATE JOINT KNEE PITCH **CHARACTERISTICS** STANCE LEG IN INTERMEDIATE JOINT **ANKLE ROLL CHARACTERISTICS** STANCE **LEG IN** INTERMEDIATE JOINT **ANKLE PITCH** STANCE **CHARACTERISTICS LEG IN** INTERMEDIATE JOINT THIGH YAW STANCE CHARACTERISTICS LEG IN INTERMEDIATE JOINT THIGH ROLL STANCE **CHARACTERISTICS** LEG IN INTERMEDIATE JOINT THIGH PITCH STANCE **CHARACTERISTICS** LEFT **LEG IN** INTERMEDIATE JOINT **KNEE PITCH** STANCE **CHARACTERISTICS LEG IN** INTERMEDIATE JOINT **ANKLE ROLL** CHARACTERISTICS STANCE LEG IN INTERMEDIATE JOINT **ANKLE PITCH CHARACTERISTICS** STANCE STIFF JOINT CHARACTERISTICS OTHER JOINT SITES

FIG.44

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

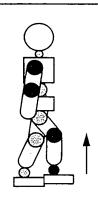
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE (ANOTHER LEG BEING LIFTED)



		<u> </u>	
	THIGH YAW	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
DICUT	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	THIGH YAW	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFI	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
OTHER JOINT SITES		СН	STIFF JOINT IARACTERISTICS

FIG.45

STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

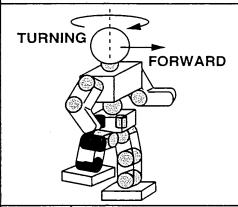
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE



	THIGH YAW	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
DICUT	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	THIGH YAW	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
LEF	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
OTHER JOINT SITES		СН	STIFF JOINT ARACTERISTICS

STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

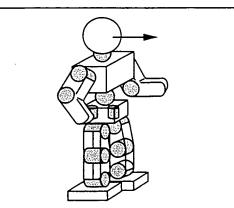
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN BOTH LEGS ARE IN STANCE



	THIGH YAW	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
DICUT	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH YAW	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
LEFI	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
ОТ	OTHER JOINT SITES		STIFF JOINT IARACTERISTICS

FIG.47

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

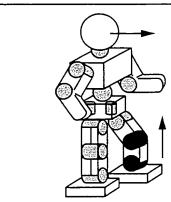
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE



		L	
	THIGH YAW	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
DICUT	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH YAW	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
LEFI	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
ОТ	OTHER JOINT SITES		STIFF JOINT IARACTERISTICS

FIG.48

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

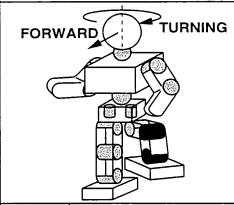
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE



	THIGH YAW	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
DICUT	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH YAW	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
LEFI	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
ОТ	OTHER JOINT SITES		STIFF JOINT ARACTERISTICS

FIG.49

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

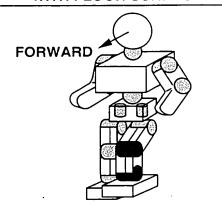
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN A SOLE LEG IS IN STANCE



		l	
	THIGH YAW	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
DIOLIT	THIGH PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	STIFF JOINT CHARACTERISTICS
	THIGH YAW	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
LEFT	THIGH PITCH	LEG IN FLIGHT	STIFF JOINT CHARACTERISTICS
LEFI	KNEE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN FLIGHT	SOFT JOINT CHARACTERISTICS
ОТ	OTHER JOINT SITES		STIFF JOINT IARACTERISTICS

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STIFF JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.12) JOINT VISCOSITY (FIG.18A)

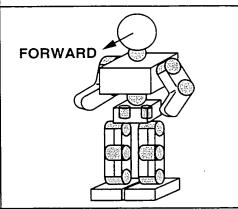
INTERMEDIATE JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18A)

SOFT JOINT CHARACTERISTICS

SERVO CHARACTERISTICS (FIG.13) JOINT VISCOSITY (FIG.18B)

TIME PERIOD WHEN BOTH LEGS ARE IN STANCE



	THIGH YAW	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
PIOLIT	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
RIGHT	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH YAW	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	THIGH PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
LEFT	KNEE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE ROLL	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
	ANKLE PITCH	LEG IN STANCE	INTERMEDIATE JOINT CHARACTERISTICS
ОТ	OTHER JOINT SITES		STIFF JOINT IARACTERISTICS

FIG.51

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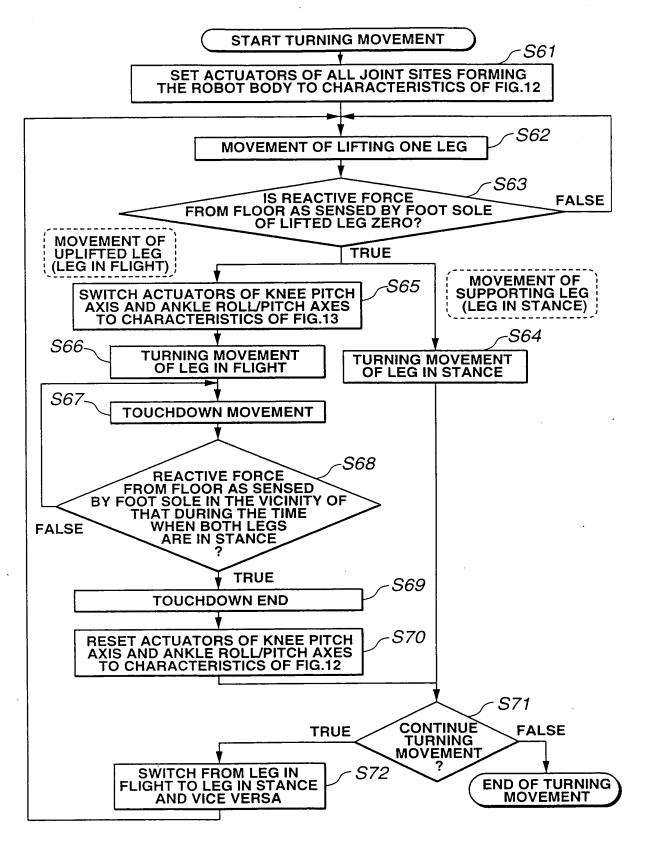


FIG.52